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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/491,389	01/26/2000	Tsu-Wei Ku	ARC-P002	8478

7590 04/10/2003

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EXAMINER

THOMPSON, ANNETTE M

ART UNIT PAPER NUMBER

2825

DATE MAILED: 04/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/491,389

Applicant(s)

KU ET AL.

Examiner

A. M. Thompson

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-13 and 16 is/are rejected.
- 7) ☒ Claim(s) 3,4,14,15 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. In this application, 09/491,389, Applicants' election without traverse of claims 1-17, drawn to placement of a datapath structure, in Paper No. 4 is acknowledged. Accordingly, pursuant to Applicants' election, claims 18-24 are cancelled. Claims 1-17 are pending.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. Elected claims are directed to relative datapath cell placement with structure bonding.

3. The disclosure is objected to because of the following informalities: A detailed review of Applicants' specification in entirety is encouraged to correct numerous misspelling and grammatical inaccuracies. Examples include in the abstract, at line 10, change "taking" to - -taken- -; at page 2, line 12, change "are related" to - -relates- -; at page 3m line 9, *relativity* is misspelled; at line 17, change "taking" to *taken*; at page 5, line 15, delete "of".

Appropriate correction is required.

Claim Objections

4. **Claims 1, 3, 4, 6, 7, 8, and 12** are objected to for the following reasons: Pursuant to **claim 1**, at line 8 delete "in a pin". Pursuant to **claim 3**, at line 2, after "location", insert - -relative- -; delete "thereby" and change "producing" to - -produces- -. Pursuant to **claim 4**, at line 2, delete "thereby"; change "producing the" to - -produces a- -; after "pseudo", insert - -length- -. Pursuant to **claim 6**, at line 2, "in a datapath

structure" is redundant phraseology; at line 3, delete "relatively", and after "position" insert - -relative- -. Pursuant to **claim 7**, this claim is not a complete sentence; either add additional limitation after "second cell" in line 3, or in line 1, change "being" to *is*. Pursuant to **claim 8**, at line 2, delete "relative", and insert it after "position" in line 2. Pursuant to claim 12, at line 6, after "connecting", change "the" to - -a--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Rejection of claims 1, 2, 5-13, and 16

7. **Claims 1, 2, 5-13 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunlop, et al. (Dunlop) U.S. Patent 4,577,276. Dunlop discloses a

technique for the placement of components on a circuit substrate. Dunlop does not explicitly teach a datapath structure. Rather, Dunlop discloses the applicability of the technique to digital logic, semiconductor memories, register banks, and further to any integrated circuit chip or subchip having interconnected circuit modules (Dunlop, col. 3, ll. 45-51). A datapath structure has interconnected circuit modules and has an iterative structure (reference U.S. Patent 5,726,902 to Mahmood et al., which illustrates a datapath features and is relied on here for referential purposes only as there would be no reason to combine this reference with Dunlop '276). Based on the above reasoning that comes from the Dunlop disclosure, it would have been obvious to one of ordinary skill in the art that Dunlop method of cell placement is also applicable to datapath structures.

8. Pursuant to claim 1 which recites [a] datapath structure (col. 3, ll. 33-51), comprising one or more cell instances (modules at column 3 ll. 33-51), each cell instance having a pin (terminals, col. 4, ll. 23-30); one or more pseudo cell instances (pseudo modules, col. 5, ll. 3-17), each pseudo cell instance in the one or more pseudo cell instances being placed at a location relative to the one or more cell instances in encouraging a predetermined structure (col. 5, ll. 3-17 discloses the biasing of a partitioning structure); and one or more pseudo nets (signal nets col. 5, ll. 3-18), a first pseudo net connecting between a pin of a first cell instance in the one or more cell instances and a pin in a first pseudo cell instance in the one or more pseudo cell instances (see Figure 4; col. 5, ll. 35-47; col. 6, ll. 1-10).

9. Pursuant to claim 2, further comprising a first relative position between the first cell instance (Fig. 3, 27) and the first pseudo cell instance (Fig. 3, 28).

10. Pursuant to claim 5, wherein the predetermined structure comprises a column structure, a row structure, or a square structure (col. 6, ll. 24-51 discloses a row or columnar (vertical) structure and col. 6, ll. 45-49 discloses adjusting row lengths to other desired configuration which would necessarily include square structures).

11. Pursuant to claim 6, which recites [a] datapath structure (col. 3, ll. 33-51) comprising a first cell (circuit module, col. 4, ll. 31-63) placed at a first position (Fig. 2, #21 or 23 or 24) and a second cell (Fig. 2, #22 or 27) being placed at a second position relative to the first position (col. 4, ll. 31-63).

12. Pursuant to claim 7, wherein the second cell is placed so that the first position of the first cell is not strictly aligned to the second position of the second cell (see Fig. 2 illustration).

13. Pursuant to claim 8, further comprising a pseudo element (pseudo modules, col. 5, ll. 3-17) for aiding in placement of the second cell at the second position relative to the first cell at the first position (col. 5, ll. 12-17).

14. Pursuant to claim 9, wherein the datapath structure comprises a column structure with a fixed vertical sequence for placing the first cell and the second cell (col. 6, ll. 30-43).

15. Pursuant to claim 10, wherein the datapath structure comprises a row structure with a fixed horizontal sequence for placing the first cell and the second cell (col. 6, ll. 43).

16. Pursuant to claim 11, wherein the datapath structure comprises an array structure with a fixed vertical sequence and a fixed horizontal sequence (col. 6, ll. 30-43; see also Fig. 7).

17. Pursuant to claim 12 which recites [a] computerized method (use of programming, col. 2, ll. 40-44; col. 6, line 52 to col. 7, line 440 for encouraging a structure bonding comprising placing a first pseudo cell instance (pseudo modules, col. 5, ll. 3-17) at a location relative to a first cell instance in a plurality of cell instances for encouraging a predetermined structure (col. 5, ll. 3-17 discloses the biasing of a partitioning structure) bonding in the plurality of cell instances; and connecting the pseudo net (signal nets col. 5, ll. 3-18) between the cell instance and the pseudo cell instance (see Figure 4; col. 5, ll. 35-47; col. 6, ll. 1-10).

18. Pursuant to claim 13, further comprising the step of minimizing a wire length in the pseudo net from the placement of the first pseudo cell instance relative to the first cell instance (col. 6, ll. 11-29).

19. Pursuant to claim 16, wherein the predetermined structure comprises a column structure, a row structure, or a square (col. 6, ll. 24-51 discloses a row or columnar (vertical) structure and col. 6, ll. 45-49 discloses adjusting row lengths to other desired configuration which would necessarily include square structures)

Allowable Subject Matter

20. Claims 3, 4, 14, 15, and 17 contain allowable subject matter.

21. Claims 14, 15, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

22. Claims 3 and 4 are additionally objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

23. The following is a statement of reasons for the indication of allowable subject matter: Pursuant to claims 3 and 4, the prior art does not disclose producing a zero length in the first pseudo net or a pseudo length having a value greater than a zero length. Pursuant to claims 14 and 15, the prior art does not disclose providing offsets between the a pseudo cell instance and a cell instance. Pursuant to claim 17, the prior art does not disclose placement without introducing extra dead placement spaces.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please reference the PTO-892 for a complete listing.

25. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to A.M. Thompson whose telephone number is (703) 305-7441. The Examiner can usually be reached Monday thru Friday from 8:00 a.m. to 5:00 p.m.. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Matthew S. Smith, can be reached on (703) 308-1323.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956 or the Customer Service Center whose telephone number is (703)306-3329.

26. Responses to this action should be mailed to:

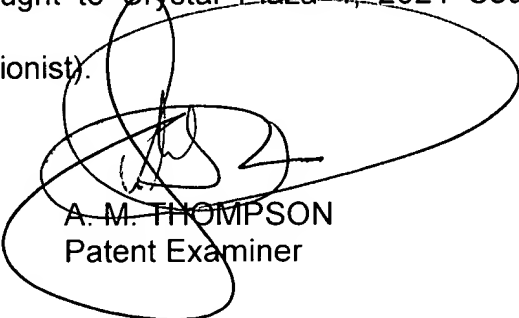
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or faxed to:

(703) 872-9318, (for **OFFICIAL** communications intended for entry)
(703)872-9319, (for Official **AFTER-FINAL** communications)

Hand-delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).



A. M. THOMPSON
Patent Examiner

5 April 2003